

WATERSHED MANAGEMENT AREA: 18

LOWER DELAWARE DRAINAGE

The watershed management area includes watersheds draining to the lower portions of the Delaware River. The principal rivers here are the Big Timber Creek, Raccoon Creek and Oldmans Creek. The area overlies Salem and Gloucester Counties and includes the following watersheds:

Oldmans Creek
Maple Swamp
Mantua Creek
Wooping Creek

Raccoon Creek
Repaupo Creek
Woodbury Creek
Big Timber Creek

Summary of ambient physical/chemical monitoring stations and classifications

<u>Station</u>	<u>Classification</u>
So. Br. Big Timber Creek at Blackwood Terrace	FW-2 Nontrout
Raccoon Creek near Swedesboro	FW-2 Nontrout
Oldmans Creek at Porches Mill	FW-2 Nontrout

OVERALL MANAGEMENT AREA ASSESSMENT

- Swimmable Support Status:

<u>WATERWAY</u>	<u>LOCATION</u>	<u>STATUS</u>
So. Br. Big Timber Ck	at Blackwood Terrace	No Support
Raccoon Creek	near Swedesboro	No Support
Oldmans Creek	at Porches Mill	Full Support

- Summary of Aquatic Life Support Status (Number of stations within each assessment category). Note: See the Biological Assessment Table located at the end of this section for details regarding macroinvertebrate assessments within the watershed management area.

No Impairment: 1 Mod. Impairment: 43 Severe Impairment: 9

MAPS here

OLDMANS CREEK

WATERSHED DESCRIPTION

Oldmans Creek drains an area of 44 square miles and flows on the Coastal Plain to the Delaware River. This creek, 20 miles long, marks the boundary between Gloucester and Salem Counties. Tidal marshes exist at the mouth of this creek, while the western third of the creek is tidal. Major tributaries include Kettle Run and Beaver Creek.

For the most part, this watershed is agricultural and forested, with some residential and industrial development. Only a few NJPDES permitted dischargers are located in the watershed; most if not all are industrial. Oldmans Creek and tributaries have been classified FW-2 Nontrout, except the tidal portions, which are classified SE-1.

WATER QUALITY ASSESSMENT

Physical/Chemical Water Quality

Locations: Oldmans Creek at Woodstown

Dissolved Oxygen: Acceptable.

Temperature: Acceptable.

Nutrients: Slightly elevated levels are observed. Median inorganic nitrogen ($\text{NO}_2 + \text{NO}_3$) is 1.44 mg/l, with some values exceeding 2.0 mg/l. Total phosphorus is also mildly elevated, with a median of 0.065 mg/l and 30% of values exceeding the criterion of 0.10 mg/l. Some samples observed contained moderately elevated levels of oxygen-demanding material; BOD sometimes exceeded 3.0 mg/l.

Bacteria: Slightly elevated. The geometric mean is 119 MPN/100 ml and 10% of samples exceeded the 400 MPN/100ml criterion.

Summary: Chemical/physical water quality is relatively good, with nutrients and bacterial levels slightly elevated. Conditions closely resemble those found during the 1986 - 1991 period of review.

Biological Monitoring

Biological monitoring within the Oldmans Creek watershed indicates moderately impaired conditions throughout the freshwater portions. See the Biological Assessment Table located at the end of this section for details regarding macroinvertebrate assessments within the watershed.

POINT SOURCE ASSESSMENT

Point source effects in this watershed are thought to be limited to the tidal portions of Oldmans Creek. No enforcement activities or hazardous waste sites were identified as impacting the watershed.

NONPOINT SOURCE ASSESSMENT

Nonpoint sources are reported to be the sole contributors to the water quality problems identified in Oldmans Creek. Agricultural sheet and rill erosion is considered a high priority in this region by the Natural Resources Conservation Service. Oldmans Creek is believed to be receiving nonpoint source pollution from agricultural runoff and suburban development. Sources of agricultural runoff include crop production, pasture land, and animal holdings. Suburban sources of pollution include runoff from road and housing construction, urban surfaces, mining activities and leachate from septic systems. All these sources are believed by local officials to be responsible for a decline in water quality and some minor habitat destruction, and are suspected to be threatening the health of the instream fisheries.

DESIGNATED USE ASSESSMENT

Monitored waters of Oldmans Creek will support the swimmable (primary contact) designated use based upon bacteria levels. The creek will partially support the "aquatic life support" designated use.

RACCOON CREEK

WATERSHED DESCRIPTION

The Raccoon Creek watershed contains approximately 40 square miles and drains central Gloucester County. The creek itself is 19 miles long and flows from Elk Township to the Delaware River, across from Marcus Hook, Pennsylvania. While there are several minor tributaries, the only significant one is the South Branch Raccoon Creek. Population centers of this rural area are Swedesboro and Mullica Hill. At the mouth of Raccoon Creek are tidal marshes, and much of the lower half of the Creek is tidal. Ewan Lake, Mullica Hill Pond, and Swedesboro Lake are among the many small lakes and ponds of this area.

The land use in this watershed is primarily agricultural/rural, with industries located along the creek's tidal section. However, there has been recent suburban residential and commercial development in much of the watershed. There are approximately six NJPDES permitted dischargers in the Raccoon Creek watershed; two are municipal and the remaining are industrial. Waters are classified as FW-2 Nontrout and SE-2.

WATER QUALITY ASSESSMENT

Locations: Raccoon Creek near Swedesboro

Dissolved Oxygen: Acceptable.

Temperature: Acceptable.

Nutrients: Moderately elevated. Median inorganic nitrogen ($\text{NO}_2 + \text{NO}_3$) is 1.5 mg/l. Total phosphorus is also elevated, with a median of 0.12 mg/l and 68% of values exceeding the criterion of 0.10 mg/l.

Bacteria: Moderately elevated. The geometric mean is 280 MPN/100 ml and 30% of samples exceeded the 400 MPN/100ml criterion.

Heavy Metals: One of the five copper samples collected during the period of review approached but did not exceed the chronic aquatic life criterion.

Summary: Physical/chemical quality is fair to good, with nutrients and bacteria at moderately elevated levels. Sanitary quality is at the same level as that encountered during the last review period. We may be seeing, however, a slight decline in nutrient levels, particularly nitrogen, when compared to the earlier assessment.

Biological Monitoring

Most monitoring locations in the Raccoon, Repaupo, and Mantua Creek watersheds are moderately impaired (see the Biological Assessment Table

located at the end of this section). Exceptions are the South Branch Raccoon Creek in Harrison Township (nonimpaired) and Edwards Run, also in Harrison Township (severely impaired).

POINT SOURCE ASSESSMENT

Raccoon Creek is a moderately enriched waterway, based on the nutrient levels present. Agricultural runoff and municipal point discharges are possible sources of these nutrients. No dischargers are currently reported to be under enforcement action for inadequately treated wastewater within this watershed.

Chemical Leaman Tank Lines (Logan Township) waste site has in the past contaminated tidal waters in the western portion of the Raccoon Creek watershed with pesticides and organics.

NONPOINT SOURCE ASSESSMENT

Raccoon Creek receives nonpoint source pollution from agriculture as well as from suburban development. The agricultural sources include runoff from crop production, pasture lands, feed lots, and animal holding areas. Suburban, urban, and industrial development has led to impacts from housing construction, urban surface runoff, mining, septic systems, runoff from road maintenance, and occasional chemical spills.

DESIGNATED USE ASSESSMENT

In general, macroinvertebrate assessments indicate that the Raccoon, Repaupo, and Mantua Creeks all partially support the "aquatic life support" designated use. Raccoon Creek is not supporting the primary contact (swimmable) status due to elevated fecal coliform concentrations.

BIG TIMBER CREEK

WATERSHED DESCRIPTION

Big Timber Creek drains an area of 63 square miles. The mainstem and most of the South Branch divide Gloucester and Camden Counties before flowing into the Delaware River near Brooklawn, south of Camden. Aside from the North and South Branches (which are 10 and 11 miles long, respectively), major tributaries include Otter Creek, Beaver Brook, and Almonesson Creek. The mainstem is less than four miles long. The major impoundments are Blackwood Lake, Grenloch Lake, Hirsch Pond, and Nash's Lake.

This watershed is primarily urban/suburban with forests at the headwaters and cities at the mouth of Big Timber Creek. There are about 14 NJPDES permitted dischargers here, of which approximately 10 are municipal. The waters in the watershed are FW-2 Nontrot, with the exception of a small area in a headwater stream (Mason Run) classified as FW-2 Trout Production.

WATER QUALITY ASSESSMENT

Physical/Chemical Water Quality

Locations: So. Br. Big Timber Creek at Blackwood Terrace

Dissolved Oxygen: Acceptable.

Temperature: Acceptable.

Nutrients: Mildly elevated. Median inorganic nitrogen ($\text{NO}_2 + \text{NO}_3$) is 1.1 mg/l with no values exceeding 1.70 mg/l. Total phosphorus is also mildly elevated with a median of 0.1 mg/l and 40% of values exceeding the criterion of 0.10 mg/l.

Bacteria: Elevated. The geometric mean is 325 MPN/100 ml and 55% of samples exceeded the 400 MPN/100ml criterion.

Heavy Metals: All five lead samples collected during the period of review exceeded the chronic aquatic life criterion.

Summary: Water quality is fair to good, with nutrients mildly elevated and bacteria elevated. Lead may be a problem with regard to aquatic life support. Conditions are similar to those found during the previous assessment using data collected between 1986 and 1991.

Biological Monitoring

Significant portions of the Big Timber watershed are found to be moderately impaired. Three tributaries were severely impaired - Pines Run in Hilltop Township, Almonesson Creek in Deptford Township, and an unnamed

tributary in Erial Township. See the Biological Assessment Table located at the end of this section for details regarding macroinvertebrate assessments within the watershed.

POINT SOURCE ASSESSMENT

Big Timber Creek is subject to a variety of potential pollution sources due to the large number of point sources within the watershed. An extensive regionalization has occurred in this watershed with the elimination of a significant number of treatment plants; hence, water quality is expected to improve with time.

Gems Landfill, a national Superfund hazardous waste site, was suspected to be contaminating Holly Run and Briar Lake with a variety of organic substances. Clean-up activities have been underway at this site. Fazzio Landfill also has been suspected of contaminating Big Timber Creek with organic chemicals.

The following nonpermitted wastewater discharges within the watershed were observed and enforcement actions taken:

FACILITY	LOCATION	RECEIVING WATER	POLLUTANT	COMMENTS
Camden Co. MUA Chews Landing Pump Station	Camden Co.	No. Br. Big Timber Creek	raw sewage discharge	15 - 18 million gallons of raw sewage were discharged from a ruptured pipe. A later assessment of the creek indicated a recovery of the affected area. Enforcement action was taken 23 Dec. 1996.
Softee Realty Co.	Runnemede, Camden Co.	Beaver Branch	sewage/wastewater	Unpermitted discharge occurred for an unknown length of time. Temporary repairs have been made, and an ACO requiring the connection of Softee Realty's sewage disposal system to the Runnemede (in Camden Co.) collection system was executed in October 1995.

NONPOINT SOURCE ASSESSMENT

Urban/suburban runoff is suspected of being an important contributor to the nutrients and bacteria in these streams. Big Timber Creek and Woodbury Creek were determined by local authorities to be receiving a wide range of pollutants from nonpoint sources. These include runoff from cropland and feed lots, road and housing construction, urban surfaces, surface mining, road maintenance, eight landfills, septic systems, waste storage tank leaks, and local spills.

DESIGNATED USE ASSESSMENT

The South Branch Big Timber Creek, in general, partially supports the "aquatic life" designated use. There are locations, however, where the use is not supported. Moderately high fecal coliform levels preclude the use of the South Branch for swimming (no support of the use).

BIOLOGICAL ASSESSMENT TABLE: AREA 18

Mgt Area	Watershd	Site ID	Water Body	Location	Municipality	Sample Date	Biological Impairment Rating
18	64	AN0655	Stone Bridge Br trib	Waddell Farm	Erial	Oct 11, 1990	moderately impaired
18	64	AN0655	Stone Bridge Br trib	Waddell Farm	Erial	Feb 20, 1991	moderately impaired
18	64	AN0655	Stone Bridge Br trib	Waddell Farm	Erial	May 15, 1991	moderately impaired
18	64	AN0655	Stone Bridge Br trib	Waddell Farm	Erial	Jul 9, 1991	severely impaired
18	64	AN655A	Stone Bridge Br	abv Waddell's Bridge	Gloucester Twp	Oct 11, 1990	moderately impaired
18	64	AN655B	Stone Bridge Br	blw Waddell's Bridge	Gloucester Twp	Oct 11, 1990	moderately impaired
18	64	AN0656	Turners Run	Ganttown Rd	Bells Lk	Jul 18, 1995	moderately impaired
18	64	AN0657	Turners Run	Last Bridge Crossing	Grenloch Terrace	Jul 18, 1995	moderately impaired
18	64	AN0658	Bg Timber Ck S Br	Turnersville - Sicklerville Rd	Turnersville	Jul 18, 1995	moderately impaired
18	64	AN658A	Toms Dam Br	Peter Cheeseman Rd	Gloucester Twp	Oct 11, 1990	moderately impaired
18	64	AN0659	Bg Timber Ck S Br	Almonesson Rd	Blenheim	Jul 13, 1995	moderately impaired
18	64	AN0660	Pines Run	L Landing Rd	Hilltop	Jul 13, 1995	severely impaired
18	64	AN0661	Bg Timber Ck N Br	Park Ave	Lindenwold	Jul 13, 1995	moderately impaired
18	64	AN0662	Mason Run	Chews Landing Rd	Lindenwold	Jul 13, 1995	moderately impaired
18	64	AN0663	Bg Timber Ck N Br	Rt 168	Chews Landing	Jul 13, 1995	moderately impaired
18	64	AN0664	Bg Timber Ck	Clements Bridge Rd	Glendora	Jul 11, 1995	moderately impaired
18	64	AN0665	Almonesson Ck	Clements Bridge Rd	Deptford Twp	Jul 18, 1995	severely impaired
18	64	AN0666	Ltl Timber Ck	Devon Rd	Bellmawr	Jul 11, 1995	moderately impaired
18	65	AN0667	Woodbury Ck	Rt 45	Woodbury	Jul 18, 1995	moderately impaired
18	69	AN0668	Mantua Ck	Greentree Rd	Washington Twp	Jul 25, 1995	moderately impaired
18	69	AN0669	Mantua Ck	Lambs Rd	Mantua Twp	Jul 25, 1995	moderately impaired
18	69	AN0670	Chestnut Br	Lambs Rd	Pitman	Jul 20, 1995	moderately impaired
18	69	AN670A	Plank Run	Rt 322	Harrison Twp	Oct 16, 1990	severely impaired
18	69	AN0671	Chestnut Br	Mantua Blvd	Mantua	Jul 20, 1995	moderately impaired
18	69	AN0672	Mantua Ck	Mantua Ave	Mantua	Jul 20, 1995	moderately impaired
18	69	AN0673	Edwards Run	Pitman - Jefferson Rd	Harrison Twp	Jul 20, 1995	severely impaired
18	69	AN0674	Edwards Run	Jessups Mill Rd	Mantua Twp	Jul 20, 1995	moderately impaired
18	68	AN0675	Still Run	Quaker Rd	E Greenwich Twp	Jul 25, 1995	moderately impaired

BIOLOGICAL ASSESSMENT TABLE continued:

Mgt Area	Watershd	Site ID	Water Body	Location	Municipality	Sample Date	Biological Impairment Rating
18	68	AN675A	Still Run	Union Rd	E Greenwich Twp	Jul 20, 1995	moderately impaired
18	68	AN0676	Rattling Run	Tomlin Rd	E Greenwich Twp	Jul 25, 1995	moderately impaired
18	68	AN0677	Pargy Ck	Swedesboro Ave	E Greenwich Twp	Aug 8, 1995	moderately impaired
18	68	AN0678	Ltl Timber Ck	Paulsboro Rd	Logan Twp	Aug 8, 1995	moderately impaired
18	72	AN0679	Raccoon Ck	Ellis Mill Rd	Elk Twp	Aug 17, 1995	moderately impaired
18	72	AN0680	Raccoon Ck	N Main St	Mullica Hill	Aug 8, 1995	moderately impaired
18	72	AN0681	Raccoon Ck S Br	Swedesboro Rd	S Harrison Twp	Oct 16, 1990	non-impaired
18	72	AN0681	Raccoon Ck S Br	Swedesboro Rd	S Harrison Twp	Aug 12, 1995	moderately impaired
18	72	AN0682	Raccoon Ck S Br	High St	Harrison Twp	Aug 8, 1995	non-impaired
18	72	AN0682	Raccoon Ck S Br	High St	Harrison Twp	Nov 1, 1995	moderately impaired
18	72	AN0683	Raccoon Ck	Tomlin Sta Rd	Harrison Twp	Aug 8, 1995	moderately impaired
18	72	AN0684	Raccoon Ck trib	Russell Mill Rd	Woolwich Twp	Aug 8, 1995	moderately impaired
18	72	AN0685	Raccoon Ck	Kings Hwy	Swedesboro	Aug 8, 1995	moderately impaired
18	74	AN0686	Oldmans Ck	Swedesboro-Monroeville Rd	Jessups Mill	Aug 17, 1995	moderately impaired
18	74	AN686A	Oldmans Ck	Rt 77	Elk Twp	Oct 17, 1990	moderately impaired
18	74	AN0687	Oldmans Ck	Lk Rd	Harrisonville	Aug 17, 1995	moderately impaired
18	74	AN0688	Oldmans Ck	Kings Hwy	Porches Mill	Aug 24, 1995	moderately impaired
18	74	AN0689	Oldmans Ck	Pointers - Auburn Rd (Rt 551)	Auburn	Aug 22, 1995	moderately impaired